

FIG. 1A
(PRIOR ART)

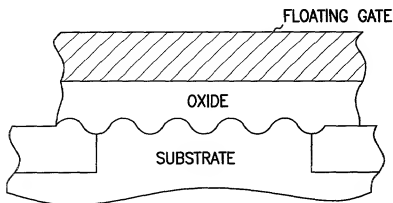


FIG. 1B
(PRIOR ART)

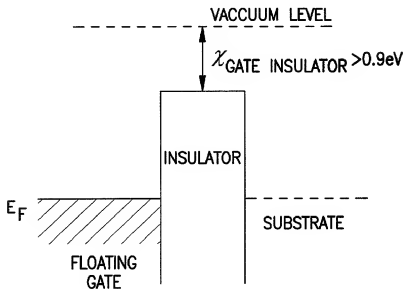


FIG. 1C
(PRIOR ART)

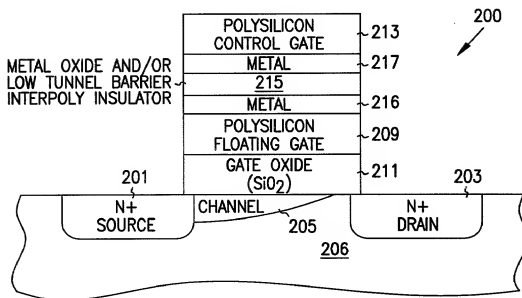


FIG. 2



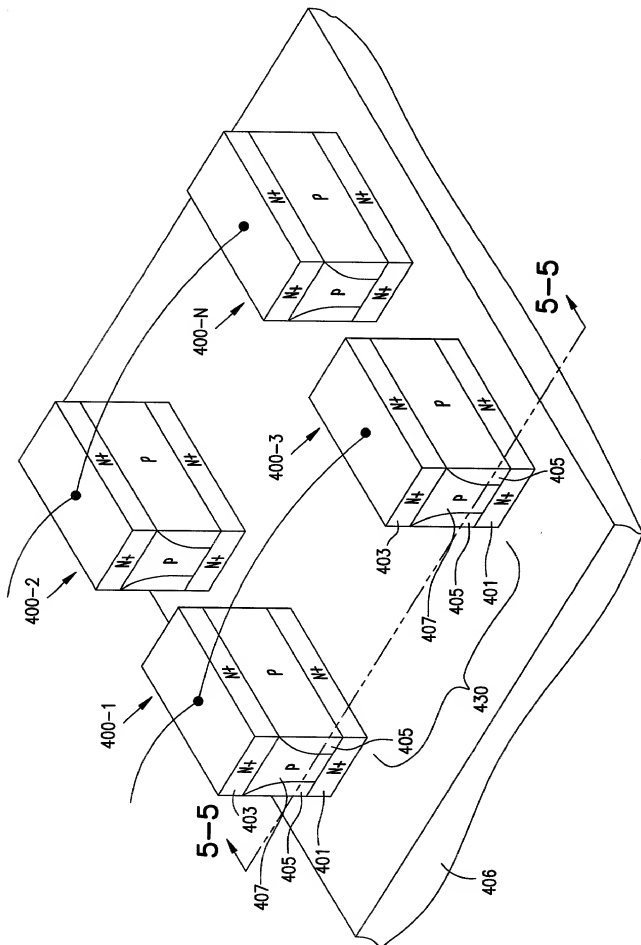


FIG. 4

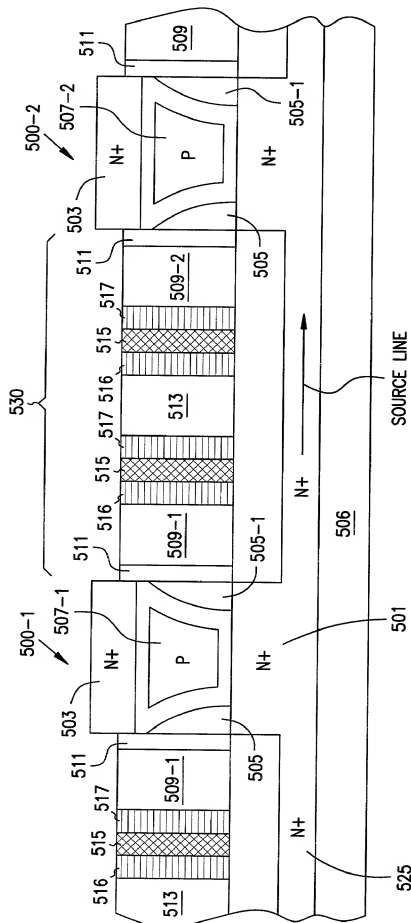
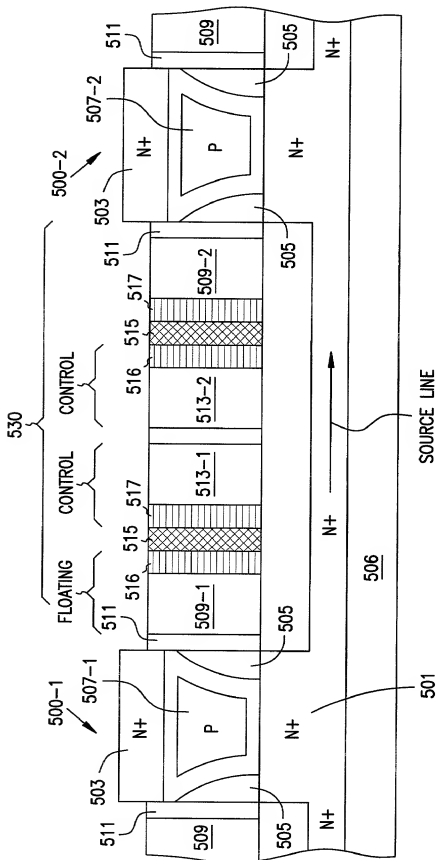


FIG. 5A



SOURCE LINE
FIG. 5B

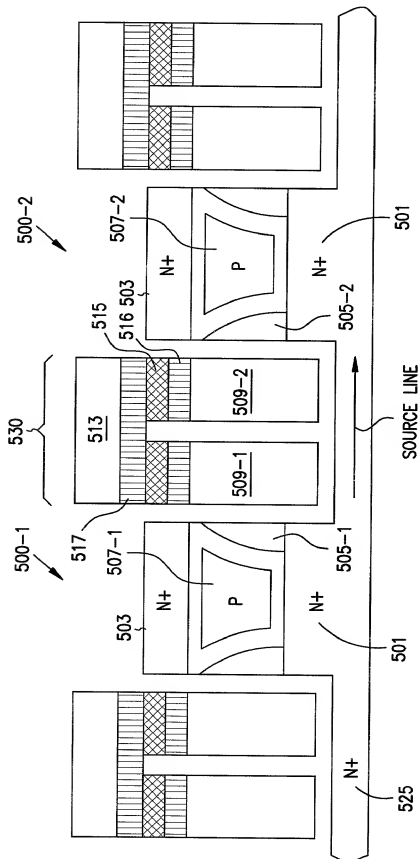
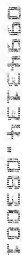


FIG. 5C



Digital Health

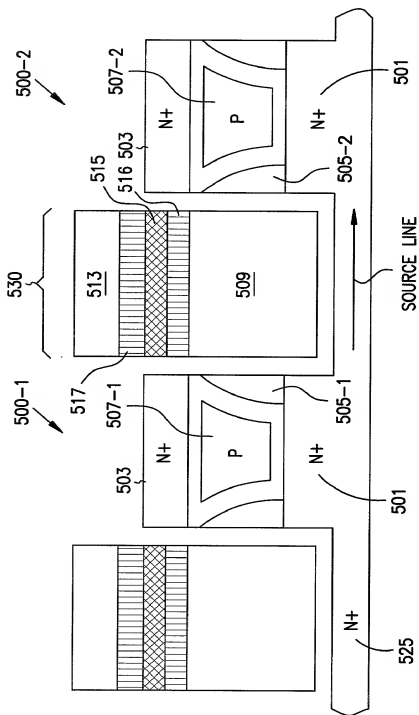


FIG. 5E

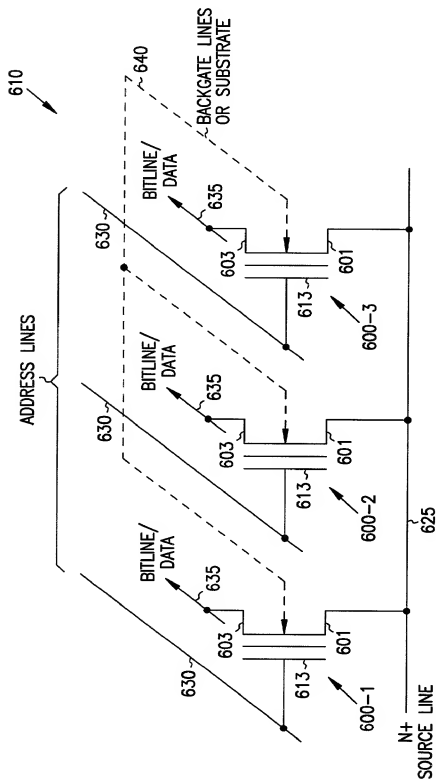


FIG. 6A

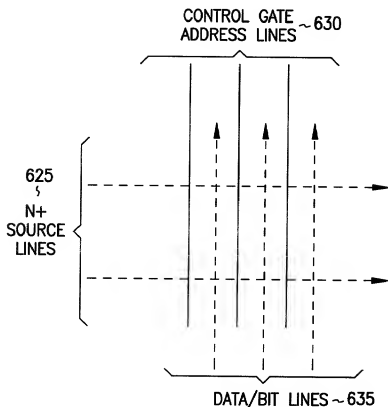


FIG. 6B

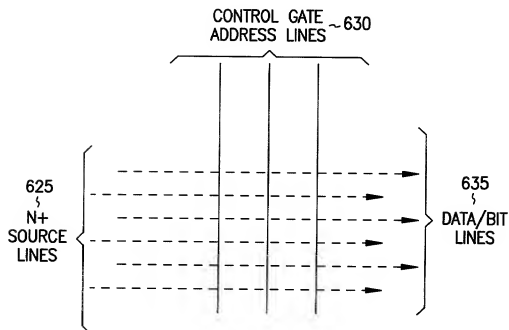


FIG. 6C

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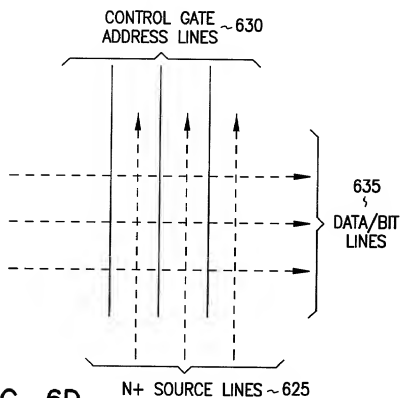


FIG. 6D

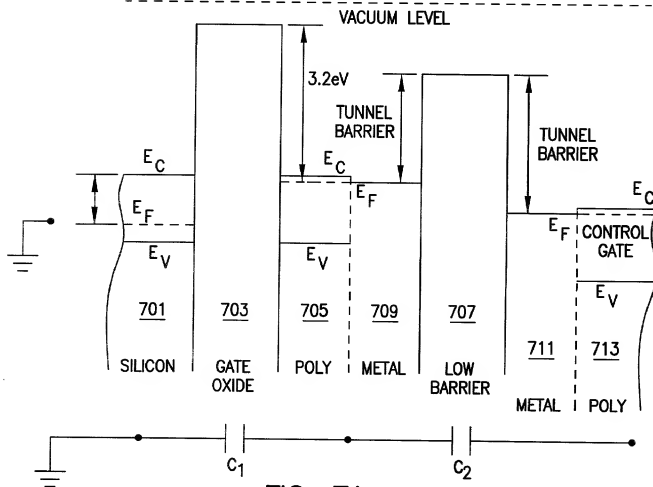
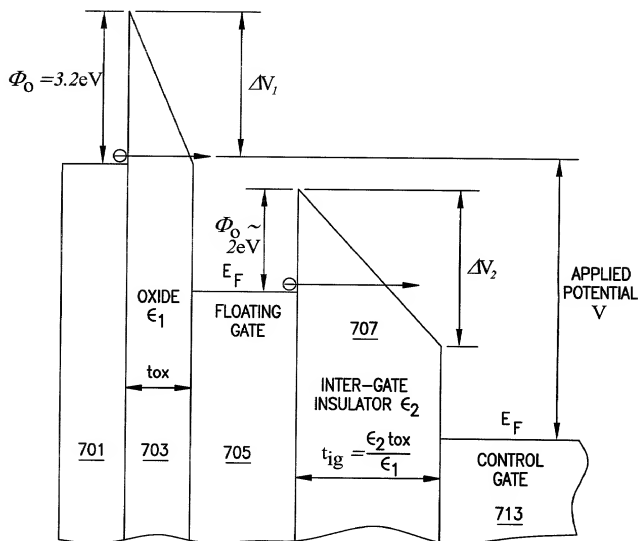


FIG. 7A

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$$J = \frac{q^2 E^2}{4\pi h \Phi} e^{-E_0/E} \quad E_0 = \frac{8\pi}{3} \frac{\sqrt{2mq}}{h} \Phi^{3/2}$$

FIG. 7B

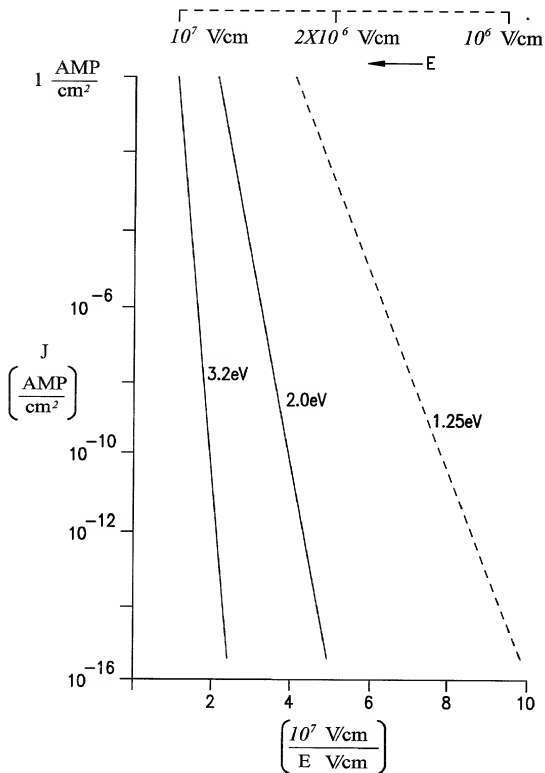


FIG. 7C

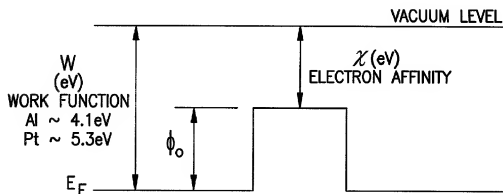


FIG. 8

	E_G	ϵ_r	ϵ_∞	χ	ϕ_0 (Pt)	ϕ_0 (Al)
<u>Conventional Insulators</u>						
SiO ₂	~ 8 eV	4	2.25	0.9 eV		3.2 eV
Si ₃ N ₄	~ 5 eV	7.5	3.8			2.4 eV
<u>Metal Oxides</u>						
Al ₂ O ₃	7.6 eV	9 to 11	3.4			~ 2 eV
NiO						
<u>Transition Metal Oxides</u>						
Ta ₂ O ₅	4.65 - 4.85		4.8	3.3	2.0	0.8 eV
TiO ₂	6.8	30 80	7.8	3.9	est. 1.2 eV	
ZrO ₂	5 - 7.8	18.5 25	4.8	2.5		1.4
Nb ₂ O ₅	3.1	35-50				
Y ₂ O ₃	6		4.4			2.3
Gd ₂ O ₃						
<u>Perovskite Oxides</u>						
SrBi ₂ Ta ₂ O ₃	4.1		5.3	3.3	2.0	0.8 eV
SrTiO ₃	3.3		6.1	3.9	1.4	0.2 eV
PbTiO ₃	3.4		6.25	3.5	1.8	0.6 eV
PbZrO ₃	3.7		4.8		est. 1.4 eV	0.2 eV

FIG. 9

Metal	Oxygen Solub., at. %	Oxide Stability Range***	Semicond. Type	Structure Temp.	Transform Temp., °C
Ta	0.8	TaO ₃ 4.7-5.0	n	Orthorhom.	t.p. 1350
Ti	28	TiO ₃ 82-5.0	n	Rutile	m.p. 1920
Zr	29	ZrO ₃ 66-5.0	n	Monoclinic	t.p. 1170
Nb	2.3	Nb ₂ O ₄ 86-5.0	n	Monoclinic	m.p. 1495
Al	v. small	Al ₂ O ₃ 2.999-3.0	n	Corundum	m.p. 2050
Pb	v. small	PbO	(p)	Orthorhom.	m.p. 885
Si	v. small	SiO ₂	n or p	Tetra. (Cyst.)	m.p. 1713

FIG. 10

Metal	Work Function, eV		
	From C-V	From Photoresponse	From Vacuum
Cs			2.2
Eu			2.5
Sm			2.7
Li			2.9
Ca			3.0
Al	4.1	4.1	4.25
Cu	4.7	4.7	4.25
Au	5.0	5.0	4.8
Ag	5.1	5.05	4.3
Ti			4.3
Mo			4.7
Rh			5.1
Ir			5.3
Pt			5.8
Se			5.9

FIG. 11

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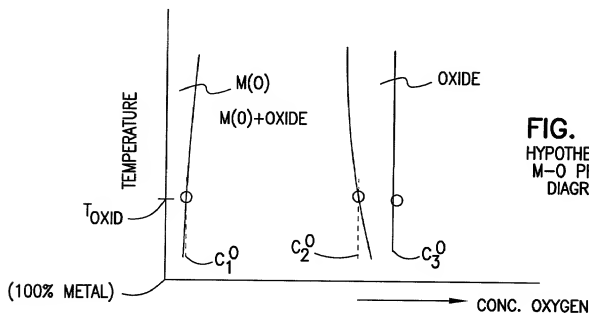
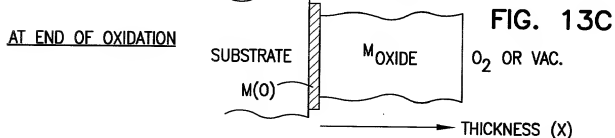
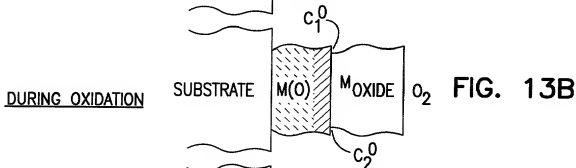
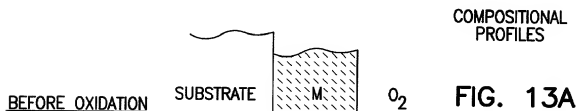


FIG. 12
HYPOTHETICAL
M-O PHASE
DIAGRAM



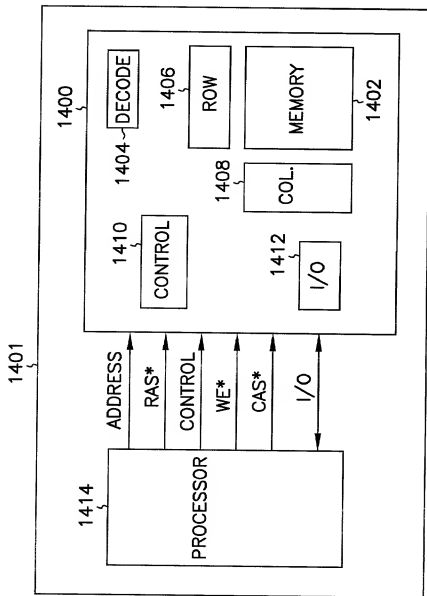


FIG. 14